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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,477	02/20/2001	Hiroki Kanai	520.39648X00	5481

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EXAMINER

CHACE, CHRISTIAN

ART UNIT	PAPER NUMBER
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2187

DATE MAILED: 04/06/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/785,477

Applicant(s)

KANAI ET AL.

Examiner

Christian P. Chace

Art Unit

2187

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-23 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 19-23 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 22 March 2004 has been entered.

Response to Amendment

Amendment filed 20 January 2004 has now been entered as paper number 9, as applicants requested. Claims 19-23 are pending. After further search and consideration, examiner has issued new grounds for rejection of the newly submitted claims. This action is non-final.

Specification

The disclosure is objected to because of the following informalities:

The phrase, "a trouble," is recited throughout the specification. It is unclear what "a trouble" is.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 19-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to independent claim 19, line 12 recites, "...requests updating data for updating data." This does not appear to make sense.

Line 11 into line 12 recites, "...from the host computer." However, a host computer is not recited anywhere else in the claims. Accordingly, "the host computer" lacks antecedent basis in the claim language, and, accordingly, it is unclear where it fits into the structural and procedural organization of the rest of the claimed invention.

Line 12 recites, "...a write request which requests...data...stored in disk drives..." A write request is known in the art as a command that seeks to write data to a disk or memory. The way the current language is recited in the claim, the instant request is technically a read request, as it is requesting data from the disk, not sending it to the disk. Accordingly, the claim language appears to be contradictory to its accepted meaning as a term known in the art.

Line 21 recites, "...updates the data..." Is this the same data as "updating data" recited previously in the claim, or is this different data? It is unclear from the claim language what "the data" is.

Claims 20-23 depend upon claim 19 and are rejected as including the subject matter of same for the reasons discussed supra.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 19-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Otterness et al (US Patent #6,460,122).

With respect to independent claim 19, a storage system is disclosed in the title.

A plurality of clusters is disclosed in figure 11 as Complex/Controller A and Complex/Controller B, with each being a cluster. Examiner notes that the figure shows both controllers to be labeled as "A." However, examiner interprets this as a typographical error in the patent, and interprets the second controller as "B."

A communication path which connects each of the clusters is disclosed in figure 11 as "Communications Fibre Loop."

A disk controller (in each cluster) is disclosed as Processor Complex A or B, respectively.

A plurality of disk drives is disclosed in figure 11 as the disk drives shown connected to the disk fibre loop in each of the clusters.

A disk interface in each of the disk controllers which connects to the disk drives of the cluster is shown in figure 11 as the "disk fibre loop."

A cache memory is disclosed in figure 11 as DATA caches in the processor complexes.

A control memory is inherent in light of the disclosure at column 23, lines 7-8, which discuss cache control firmware. Inherently, if there is cache control firmware, there must be a place to store it. That place to store it is interpreted by examiner to be a control memory.

Examiner also notes that all of the above is disclosed in prior art figure 17 of the instant disclosure, as well.

Turning to the last two limitations of the instant independent claim, in light of the 35 USC 112, 2nd paragraph rejections supra, examiner has interpreted "updating data" to be "data" in the traditional sense – information stored in a memory. Also, the "write request," has been interpreted as a generic request of any kind, as there is confusion as to whether it is a read or a write request, also as discussed supra. It is also noted that although lacking antecedent basis in the claim language, a host is disclosed by the instantly cited prior art of record in figure 11 as Host A and/or B.

When a first disk controller of a first cluster receives from [a] host computer a request for data stored in disk drives of a second controller of a second cluster, the first controller checking whether the data is stored in the cache of the second disk controller is disclosed in figure 12, #606. The "other caches" include other clusters, as discussed in column 23, lines 10-11, being referred to therein as "remote caches."

If the data is not stored in the cache of the second controller, the first controller sending the request to the second controller via the communication path is disclosed in

the path of figure 12, #606 to #607. Inherently, to read data from the disks, it must be done through the interconnect that connects the system to the disks.

The second disk controller, in response to the request from the first disk controller, reading the data from the disk drives of the second disk controller to the cache memory of the second disk controller is disclosed in figure 12, #607 as well as reading data from "the appropriate disks." Examiner interprets this to mean the disk that has the requested information on it. That may be the second cluster's disks.

With respect to claim 20, when the cache memory of the second controller has the requested data, the first disk controller requesting the second disk controller to store that data in the cache memory of the second controller is disclosed in figure 12, #608, which sends the data to the cache controller that has it – in this case, controller B, or the second controller.

With respect to claim 21, each control memory of the clusters storing a cache directory to identify the disk controller having a disk drive which stores the data in that cache memory is disclosed in figure 6, #514, which shows the aping of cache lines of system drive sectors. Column 15, lines 40-43 discusses the hash table shown in figure 6, and how it allows the cache control firmware (inherently stored in the control memory) to perform a quick look-up to determine if the data is already cached [or in the disk].

With respect to claim 22, said first disk controller receiving a "completed report of data for updating" from said second disk controller, and thereafter send the report to said host computer is disclosed in figure 12, the path from #608 to #602, which is a data movement completion report to the host computer.

With respect to claim 23, the second controller inhibiting access to the data which is the object of the request until the first disk controller sends the report to the host computer is disclosed in figure 12 as well, as #602 does not occur until the path from #608 is completed, as shown by the arrow.

Response to Arguments

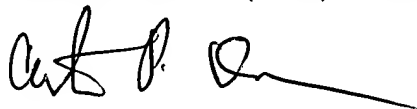
With respect to applicants' arguments, they are moot in light of the cancellation of claims 1-18, and a new reference being applied to the instant claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian P. Chace whose telephone number is 703.306.5903. The examiner can normally be reached on 9-4-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 703.308.1756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Christian P. Chace